The Regulatory Perspective on Infiltration BMPs

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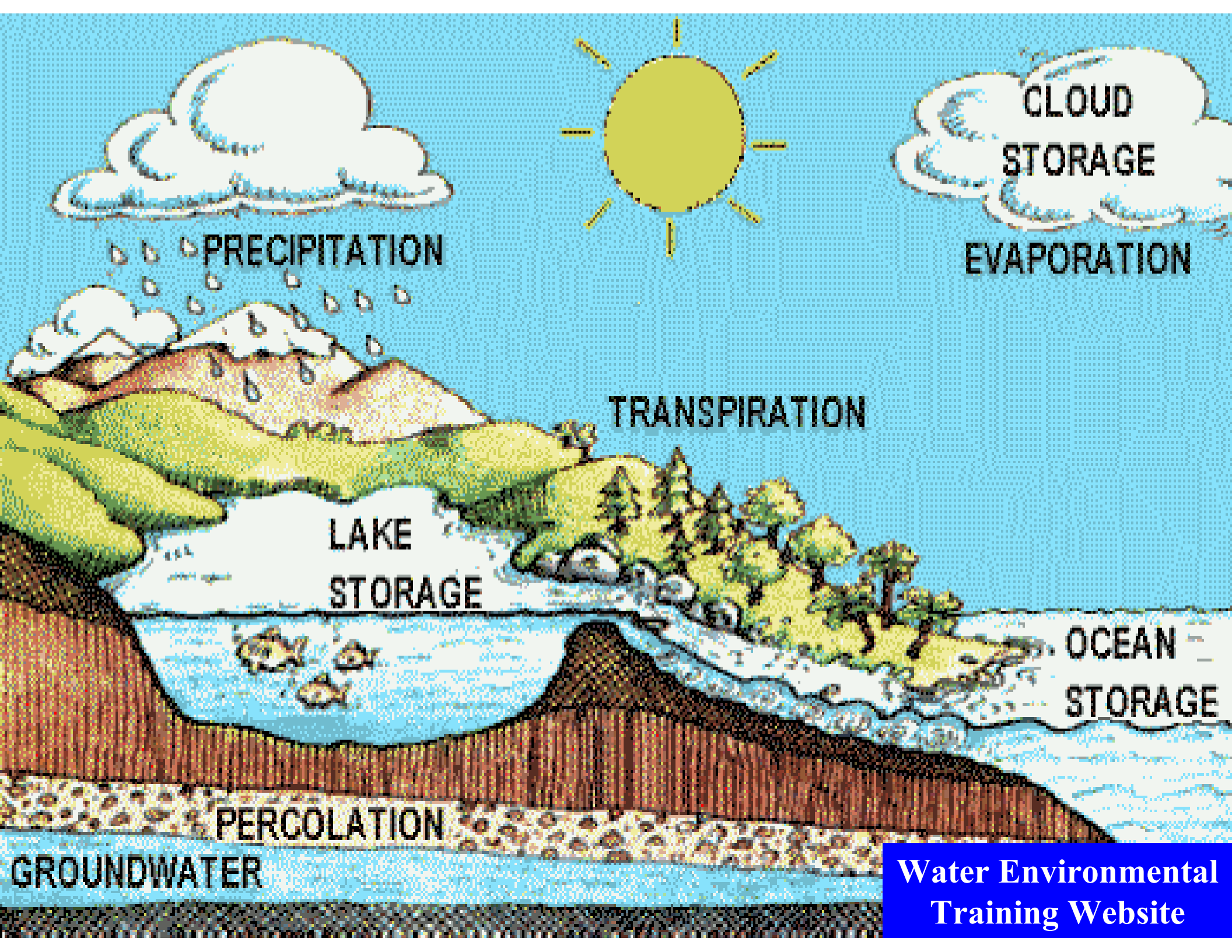
Summary

- Why is infiltration important?
- What are benefits and problems of infiltration BMPs?
- How does the Regional Board deal with infiltration BMPs?
  - Regulations
  - Research


CLOUD
STORAGE
PRECIPITATION
EVAPORATION
TRANSPIRATION
LAKE
STORAGE
OCEAN
STORAGE
PERCOLATION
GROUNDWATER
Water Environmental
Training Website

Development Changes

- Hydromodification
  - Increased amount of impervious surface
    - Reduced vegetative cover
    - Decreased amount of infiltration
    - Increased runoff volume
  - Efficient conveyance system
    - Increased peak runoff rates
- Land use changes
  - Increased pollutant loads

Pollutants in Urban Runoff

- **Related to land use**
  - **High variability**
  - **Can be reduced by source-control BMPs**
- **Water to be infiltrated should have only low pollutant concentrations**
  - **Part of a treatment train**

Infiltration BMPs

- **Do not replace the natural system**
  - Small area for infiltration
  - Altered vegetative cover
  - Altered substrate
- **Must be properly sited, designed, constructed and maintained**

Benefits of Infiltration BMPs

- Reduced storm water volume
  - Reduced pollutant loads in runoff
  - Reduction of peak runoff rate
- Pollutant removal
  - Settling
  - Filtering
  - Sorption
  - Biotransformation
- Recharge groundwater
  - Increased baseflow

Problems with Infiltration BMPs

- **Potential groundwater contamination**
  - What pollutants?
  - Site characteristics?
- **Long-term effectiveness?**
  - High failure rate (Livingston, 1995)
    - **Overflows**
- **Maintenance needs**
  - Who inspects/maintains?

Regulatory Perspective

- **Regulations encourage infiltration for storm water treatment**
  - Ventura County
  - LA County
  - San Diego County
  - Orange County
- **Regulations discourage infiltration if groundwater is at risk**

Regional Board Considerations

- Case-Specific Approach
  - Prohibitions?
  - Groundwater in area?
  - How much water infiltrated?
  - Pollutants involved?
  - Alternatives?

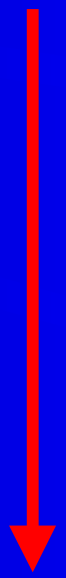
Groundwater

- **Confined/Unconfined**
- **Depth**
  - 3 meters or 10 feet?
- **Beneficial Use**
  - Drinking water?
- **Contaminated?**

Pollutant Mobility

- Salts
- Nutrients
- Pesticides/Organics
- Microorganisms
- Metals

Decreasing mobility



Mobility Factors

- Soil type
- Influent quality
- Infiltration rate
- Climate
  - Does the substrate dry out?
  - Temperature

Region-Specific Guidelines

- **Lahonton Region (Lake Tahoe)**
  - **effluent limits for influent to infiltration systems**
- **San Francisco Bay Region**
  - **shallow drainage well program**
- **Southern California**
  - **MS4 Permit Guidelines (SUSMPs)**

Infiltration Research

- **Fresno area (Schroeder, 1995-USGS)**
  - No GW contamination found
- **EPA study (Pitt et al., 1994)**
  - Infiltration can be effective
  - Must consider pollutants and pre-treatment
- **New studies**
  - Los Angeles
    - **Drinking Water Augmentation Study Work Group**
    - **Sun Valley Watershed Management Plan**

Conclusions

- Infiltration BMPs can provide storm water treatment and peak flow attenuation
- Groundwater contamination must be prevented
- Regional Boards use a region- or case-specific approach
- Continuing research will support future guidelines